

**U.S. FISH AND WILDLIFE SERVICE  
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: *Vagrans egistina*

COMMON NAME: Mariana wandering butterfly

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: April 2010

**STATUS/ACTION**

☐ Species assessment - determined we do not have sufficient information on file to support a proposal to list the species and, therefore, it was not elevated to Candidate status

☐ New candidate

☒ Continuing candidate

☐ Non-petitioned

☒ Petitioned - Date petition received: May 11, 2004

☐ 90-day positive - FR date:

☒ 12-month warranted but precluded - FR date: May 11, 2005

☐ Did the petition request a reclassification of a listed species?

**FOR PETITIONED CANDIDATE SPECIES:**

a. Is listing warranted (if yes, see summary of threats below)? Yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.

Higher priority listing actions, including court-approved settlements, court-ordered and statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for the species. We continue to monitor populations and will change its status or implement an emergency listing if necessary. The "Progress on Revising the Lists" section of the current CNOR (<http://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

☐ Listing priority change

Former LP: \_\_\_\_

New LP: \_\_\_\_

Date when the species first became a Candidate (as currently defined): September 19, 1997

☐ Candidate removal: Former LPN: \_\_\_\_

- \_\_\_ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
- \_\_\_ U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
- \_\_\_ F – Range is no longer a U.S. territory.
- \_\_\_ I – Insufficient information exists on biological vulnerability and threats to support listing.
- \_\_\_ M – Taxon mistakenly included in past notice of review.
- \_\_\_ N – Taxon does not meet the Act’s definition of “species.”
- \_\_\_ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Insects; Family Nymphalidae (butterfly)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Guam, Commonwealth of the Northern Mariana Islands (Rota)

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Commonwealth of the Northern Mariana Islands (Rota)

LAND OWNERSHIP The Commonwealth of the Northern Mariana Islands owns the land that supports the last known population of this butterfly.

LEAD REGION CONTACT: Linda Belluomini, (503) 231-6283, linda\_belluomini@fws.gov

LEAD FIELD OFFICE CONTACT: Pacific Islands Fish & Wildlife Office, Christa Russell (808) 792-9400, christa\_russell@fws.gov

## BIOLOGICAL INFORMATION

### Species Description

The Mariana wandering butterfly (*Vagrans egistina*) is endemic to the islands of Guam and Rota in the Mariana archipelago. Like most nymphalid butterflies, orange and black are the two primary colors exhibited by this species. Males and females appear similar in color and size. The overall color is black with a large orange splotch (irregular pattern) that extends from the posterior portion of the forewings to the anterior portion of the hindwings. Obvious stripes or rows of spots are lacking (Schreiner and Nafus 1997).

### Taxonomy

The Mariana wandering butterfly was originally named *Issoria egistina* (Swezey 1942). In 1934, Hemming published the genus *Vagrans* as a replacement name for the genus *Issoria*. Schreiner and Nafus (1997) recognize this species as *Vagrans egistina* which is the most recent and accepted taxonomy. We have carefully reviewed the available taxonomic information and have concluded the species is a valid taxon.

### Habitat/Life History

The Mariana wandering butterflies are good fliers, and in an undisturbed setting probably existed as a series of meta-populations (Harrison *et al.* 1988), with considerable movement between demes and continued colonization and extinction in disparate localities. The larvae of this butterfly feed on the plant species, *Maytenus thompsonii* (luluhut), which is endemic to the Mariana Islands (Swezey 1942; Schreiner and Nafus 1996).

### Historical Range/Distribution

The Mariana wandering butterfly, originally described from Guam, was considered to be rare, but widespread, in 1936 (Swezey 1942). It was collected on Rota in the 1980s (Schreiner and Nafus 1996).

### Current Range/Distribution

The Mariana wandering butterfly has not been seen on the island of Guam since 1979, and is currently considered extirpated from Guam (Schreiner and Nafus 1996). During the 1995 surveys on Rota, the Mariana wandering butterfly was seen at one location (Schreiner and Nafus 1996).

### Population Estimates/Status

During the 1995 surveys on Rota, the host plant (luluhut) of the Mariana wandering butterfly was abundant but only one butterfly population of 7 individuals (thought to be all males based on their behavior) could be located. No eggs or larvae could be found (Schreiner and Nafus 1996).

## THREATS

A. The present or threatened destruction, modification, or curtailment of its habitat or range.  
None known.

B. Overutilization for commercial, recreational, scientific, or educational purposes.  
We are currently unaware if this species is being collected for commercial, recreational, scientific, or educational purposes. However, rare butterflies and moths are highly prized by collectors (Morris *et al.* 1991), who often take all individuals obtainable (59 FR 18350; United States Department of Justice (DOJ), *in litt.* 1993). The listing of butterflies as federally endangered may increase their attractiveness to collectors of rare species (DOJ, *in litt.* 1993). Unrestricted collecting and handling are known to impact populations of other species of rare Lepidoptera (Murphy 1988).

C. Disease or predation.

Numerous alien predators and parasitoids of Lepidoptera have become established, purposefully or adventitiously, in the Mariana Islands, including Guam and Rota, and these have been documented to attack and significantly impact other species of native butterflies (Peterson 1957; Schreiner and Nafus 1986; Nafus 1989, 1992, 1993a, b, c). While there is little documentation, these alien predators and parasitoids undoubtedly contribute to the decline of this butterfly.

The parasitoid *Trichogramma chilonis* (no common name (NCN)) was purposefully released on Rota in 1935 and on Guam in the early 1970s to control unwanted lepidopterans and has become established on both these islands (Nafus and Schreiner 1989). Nafus (1993a) documented the heavy parasitism of eggs of the common eggfly (*Hypolimnas bolina*), also a nymphalid butterfly, by *T. chilonis* and two other native parasitoids *Telenomus* sp.(NCN) and *Ooencyrtus* sp.(NCN). The two native species also occur on Rota and have been documented to attack the eggs of the Mariana wandering butterfly (Schreiner and Nafus 1996). Nafus (1992) also found the major pupal parasitoid to be *Brachymeria lasus* (NCN), another deliberate biological control introduction. Nafus (1992) also stated that the Mariana wandering butterfly could have been affected by *B. lasus*.

Nafus (1993a) found ants to be major predators of both eggs and larvae of the common eggfly. The most commonly observed ants were dwarf peccidicel ants (*Tapinoma minutum*), tropical fire ants (*Solenopsis geminate*), white-footed ants (*Technomyrmex albipes*), and bi-colored trailing ants (*Monomorium floricola*). Ants prey on all immature stages of Lepidoptera and can completely exterminate populations (Zimmerman 1958). During some times of the year, alien ants destroyed virtually all the eggs of the common eggfly in Guam (Nafus 1992), and predation by alien ants is the primary cause of mortality (>90 percent) in the Mariana eight spot butterfly (*H. octocula marianensis*) (Schreiner and Nafus 1996), another nymphalid butterfly that also occurs on the island of Guam.

Ants are known to occur on Rota, and are likely to be the same types recorded for the island of Guam (F. Amidon and A. Marshall, U.S. Fish and Wildlife Service (Service), pers. comm. 2007).

D. The inadequacy of existing regulatory mechanisms.

The Mariana wandering butterfly currently receives no protection under the federal Endangered Species Act (16 U.S.C. §1531-1544).

E. Other natural or manmade factors affecting its continued existence.

The Mariana wandering butterfly has been extirpated from Guam and persists in extremely low numbers on Rota. This circumstance makes it vulnerable to extinction due to a variety of natural processes. Small populations are particularly vulnerable to reduced reproductive vigor caused by inbreeding depression, and they may suffer a loss of genetic variability over time due to random genetic drift, resulting in decreased evolutionary potential and ability to cope with environmental change (Lande 1988; Pimm *et al.* 1988; Center for Conservation Update 1994; Mangel and Tier 1994). Small populations are also demographically vulnerable to extinction caused by random fluctuations in population size and sex ratio and to catastrophes such as typhoons (Lande 1988).

## CONSERVATION MEASURES PLANNED OR IMPLEMENTED

In 2009, we provided field information sheets with color pictures and descriptions of the Mariana wandering butterfly and its host plants to over 20 professional staff currently working in the field on the islands of Rota, Tinian, and Saipan. The sheets request that pictures, GPS points and field notes be provided to the Service in an effort to obtain information on this species (Nate Hawley, formerly with the Service, *in litt.* 2009).

A survey led by the Service was conducted on the island of Tinian, CNMI from June through October, 2008, to determine the presence or absence of two butterfly species, the Mariana wandering butterfly and the Mariana eight spot butterfly (*Hypolimnas octucula mariannensis*). While Tinian is not known to be part of either species' historical range the likelihood of introduced pests arriving on Tinian due to an increase in sea and air transports to this island is a concern for a suite of native butterfly species, including the Mariana wandering butterfly. Additionally, any reduction of host plant sites for these two species may be of conservation concern if translocation to Tinian is considered in future recovery or enhancement plans. While four host plant areas were identified and monitored on Tinian, no life stages of either butterfly were found (Hawley 2009).

Surveys on Guam insect biodiversity are currently underway (C. Aguon, Guam Division of Aquatic and Wildlife Resources, *in litt.* 2009).

#### SUMMARY OF THREATS

Based on our evaluation of predation and parasitism we conclude there is sufficient information to develop a proposed listing rule for this species due to the likely threat of predation by ants and parasitism by small wasps. The extirpation of this species from Guam and its reduction to low numbers on Rota makes it vulnerable to random demographic and environmental events. We find that this species is warranted for listing throughout all of its range, and, therefore, find that it is unnecessary to analyze whether it is threatened or endangered in a significant portion of its range.

For species that are being removed from candidate status:

\_\_\_ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

#### RECOMMENDED CONSERVATION MEASURES

- Conduct surveys for the Mariana wandering butterfly in known historic range and in potentially suitable habitat
- Conduct parasite control
- Conduct ant control

## LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
<b>High</b>	<b>Imminent</b>	Monotypic genus	1
		<b>Species</b>	<b>2*</b>
	Non-imminent	Subspecies/population	3
		Monotypic genus	4
		Species	5
Moderate to Low	Imminent	Subspecies/population	6
		Monotypic genus	7
		Species	8
	Non-imminent	Subspecies/population	9
		Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

### *Magnitude:*

The threat to the Mariana wandering butterfly from predation by nonnative ants and parasitism by small wasps are of high magnitude. Nonnative ants and parasitic wasps occur rangewide. The small number of individuals and small number of populations also make this species very susceptible to the negative effects of randomly occurring natural events such as typhoons and storms.

### *Immediacy of Threats:*

The likely primary threat of predation by nonnative ants and parasitism by small wasps are imminent because they are believed to be ongoing.

Rationale for Change in Listing Priority Number (insert if appropriate)

\_\_\_\_ Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? Yes

Is Emergency Listing Warranted? No. The species is not considered for emergency listing at this time because the immediacy of the threats is not so great as to imperil the species within the time frame of the routine listing process. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in this species' extinction, then the emergency rule process for this species will be initiated. We will continue to monitor the status of the Mariana wandering butterfly as new information becomes available. This review will

determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

#### DESCRIPTION OF MONITORING

We conducted literature searches for recent articles on this species and attempted to contact relevant species experts regarding the current status of this species. No new information on this species was found, and there is no new information on the numbers of individuals or populations, or on threats to the species.

This level of monitoring is appropriate to update the status of the species because a thorough literature search was conducted as well as relevant experts contacted. Information contained in this assessment form was verified and any updated information incorporated.

#### List of Experts Contacted:

Name	Date	Affiliation
Sylvan O. Igisomar	January 29, 2010	CNMI Division of Fish and Wildlife, Saipan
Celestino Aguon	January 29, 2010	Guam Division of Aquatic Wildlife and Resources

The Mariana wandering butterfly is included in the list of species in the Guam Comprehensive Wildlife Conservation Strategy (Guam Division of Aquatic Wildlife and Resources 2005).

#### COORDINATION WITH STATES

On January 29, 2010, we sent a letter to the Guam Division of Aquatic Wildlife and Resources (DAWR) and to the CNMI Division of Fish and Wildlife (DFW) requesting their review and comments on our most recent candidate assessment of this species. No response was received from either the CNMI DFW or the Guam DAWR.

#### LITERATURE CITED

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Hawley, N. 2009. Candidate butterflies. U.S. Fish and Wildlife Service Report. 12pp.

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- Peterson, Jr., G.D. 1957. An annotated checklist of parasites and predators introduced into Guam during the years 1950-1955. Hawaiian Entomol. Soc. 16:199-202.
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- Zimmerman, E.C. 1958. Macrolepidotera. Insects of Hawaii. Vol. 7. University of Hawaii Press, Honolulu.

#### Personal Communications

- Aguon, C., Guam Division of Aquatic and Wildlife Resources, Letter regarding DAWR's response to request for information on candidate assessment forms. March 20, 2009.
- Hawley, N. U.S. Fish and Wildlife Service, email, February 2, 2009.
- Igisomar, S.O. CNMI Division of Fish and Wildlife, Letter regarding CNMI's response to request for information on candidate assessment forms. February 27, 2008.
- Amidon, F. 2007. Note to files on documentation of ants on Rota.
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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve:

Acting Carolyn L. Bohan 5/18/10  
Regional Director, Region 1, Fish and Wildlife Service Date

Ronan W. Gould  
ACTING  
Director, Fish and Wildlife Service October 22, 2010

Concur:

Do not concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date

Director's Remarks:

Date of annual review: April 16, 2010  
Conducted by: Lorena Wada, Pacific Islands FWO  
Biologist, Prelisting and Listing Program

Comments:  
PIFWO Review

Reviewed by: Christa Russell Date: April 22, 2010  
Prelisting and Listing Program Coordinator

Marilet Zablan Date: April 26, 2010  
Assistant Field Supervisor, Endangered Species Division

Gina Shultz Date: April 30, 2010  
Acting Field Supervisor